CLAIMS:

1.   Method of registering a first image and a second image, the method comprising the steps of: selecting at least one first landmark in the first image; selecting at least one second landmark in the second image; and registering the first and second images by using a similarity value which relates to a similarity of a first region in the first image determined by the at least one first landmark and a second region in the second image determined by the at least one second landmark; wherein the at least one first landmark corresponds to the at least one second landmark.

2.   The method of claim 1, wherein, for the first image having a first number of dimensions, a second number of first landmarks is selected; wherein, for the second image having the first number of dimensions, the second number of second landmarks is selected; wherein the second number of first landmarks determine first vertices of first simplices for determining a third number of third regions in the first image; wherein the second number of second landmarks determine second vertices of second simplices for determining the third number of fourth regions in the second image; wherein the second number is the first number plus one; wherein the first and second landmarks are selected in accordance with a qualifying function;

3.   The method of claim 2, wherein, for each of the second number of second landmarks, a local deformation field is determined for determining a first global deformation field which approximately describes a deformation required to the first image for registration onto the second image.

4.   The method of claim 3, wherein, for each of the third number of third regions, a first similarity value is determined relating to a similarity between a respective one of the third regions to a respective corresponding one of the fourth

regions by using the first global deformation field.

5.   The method of claim 4, wherein it is determined whether there is a fifth region of the third regions which first similarity value is less than a preset threshold
5   value; wherein, when there is a fifth region, a third landmark is selected in the fifth region for determining third simplices in the fifth region which determine a plurality of sixth regions; wherein, when there is a fifth region, a fourth landmark is selected in a seventh region of fourth regions for determining fourth simplices in the seventh region which determine a plurality of eighth regions; wherein the third landmark corresponds
10   to the fourth landmark such that the sixth regions correspond to the eighth regions; wherein, for each of the sixth regions, a second similarity value is determined relating to a similarity between a respective one of the sixth regions to a respective one of the eighth regions by using a second global deformation field which has been refined by using a further local deformation field of the third landmark.
15

6.   The method of claim 5, wherein the method is iteratively repeated until all similarities exceed the preset threshold value.

7.   The method of claim 1, wherein the method is applied in medical
20   imaging to one of CT data sets, MRI data sets, PET data sets, SPECT data sets, and ultrasonic imaging data sets.

8.   Image processing device, comprising: a memory for storing a first image and a second image; and an image processor for registering the first image and the
25   second image, wherein the image processor is adapted to perform the following operation: selecting at least one first landmark in the first image; selecting at least one second landmark in the second image; and registering the first and second images by using a similarity value which relates to a similarity of a first region in the first image determined by the at least one first landmark and a second region in the second image
30   determined by the at least one second landmark; wherein the at least one first landmark corresponds to the at least one second landmark.

14

9.   Computer program for registering a first image and a second image, wherein the computer program causes a processor to perform the following operation when the computer program is executed on the processor: selecting at least one first

5   landmark in the first image; selecting at least one second landmark in the second image; and registering the first and second images by using a similarity value which relates to a similarity of a first region in the first image determined by the at least one first landmark and a second region in the second image determined by the at least one second landmark; wherein the at least one first landmark corresponds to the at least one

10   second landmark.